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ABSTRACT OF JOURNAL—*continued.*

Actual.	Running.	Distance.	Weather.	Date.	REMARKS.
10	7 1	97 10	fair	27 Sep.	Start early—4 miles beyond village the river takes a sudden bend, as if returning towards coast, and half a mile farther resumes its original course as it debouches from a slatey cañon in which we discover quantities of decomposed quartz. This cañon is about 3 miles long—the transit is difficult—prospects 2 cents to "pan"—camp or bar between cañons—one mile of open.
11	1	6	fair	28 "	Enter 2nd cañon—day's work hard—have to climb over rocks to drag canoe along—fall of river from 8 to 10 feet per mile.
12	.	.	rain	29 "	Camp on tributary of Nass—prospect "colors" on the banks.
13	1	3	fair	30 "	Push on in hope of getting through cañon—pass a fearful whirlpool, and are stopped by waterfalls rendering passage by canoes impossible—land trails good. As we cannot proceed, we determine to wait fall of river upon some bar previously prospected—return to camp.
	10	116			
14	1	11	fair	1 Oct.	Return to 1st cañon to a place where outline of a large bar (under water) appears 20 feet from river—sink pits in gravel banks which prospect well—only 2 feet of bar out of water, prospects on which are good.
15	.	.	fair	2 "	Sunday—no work done—water falling.
16	.	.	fair	3 "	Prepare rocker and prospect. "Tchaik" Nass chief visits us—his men all armed—Indians glad to see white men—exchange presents.
17	.	.	rain	4 "	Rock 100 buckets—get about 1·00 dollars—rocker in bad order—our quicksilver is reported to be poor.
18	.	.	rain	5 "	Our Indians procure a light canoe and go up river with 2 of the party—we are most anxious to ascertain if cañon is broken above, feeling confident from the auriferous indications of the country that in an open district above rich prospects would be discovered.
19	.	.	snow	6 "	Snow and frost—copper proves useless—roast it to work out verdigris.
20	.	.	snow	7 "	Ditto wash 200 buckets—get about 2·50 dollars.
21	.	.	fair	8 "	Wash 400 buckets—get about 4·50 dollars. Our Indians return with light canoe. The party went 10 miles higher up than we did—5 miles by water, 5 by trail—prospecting wherever they could. They only took a pan with them—they saved 1 or 2 of their prospects—the gold in which seems somewhat larger than our bar. Could learn nothing as to length of cañon—they came to a new tribe of Indians speaking French after a fashion—these Indians were good.
22	1	35	fair	9 "	Start for Fort Simpson.
23	1	6	rain	10 "	Blowing half a gale of wind—start from our camp (1 mile below 1st Indian village), crossing the reach opposite Old Fort, took in a reef by doubling and lowering our sail—heavy seas—canoe half full of water—make for land opposite Old Fort.
24	.	.	rain	11 "	Heavy thunderstorm and gale.
25	.	.	rain	12 "	Drowned out—shift our camp.
26	.	.	fair	13 "	Wind dead ahead during the day, everything prepared for a start—at 11 P.M. wind changes—the moon being clear we start at 1 A.M. (14th) on our journey—blowing very fresh 5 A.M. (14th) a perfect deluge of rain sets in, and continues all day. At 6 P.M. reach Fort Simpson—report myself at Fort—am invited to become a guest—Captain McNeill's hospitality and kindness to myself and my party I shall never forget.
27	1	64	rain	14 "	
	4	116			

The second Paper read was—

2. *Latest Explorations in British North America.* By Captain J. PALLISER, F.R.G.S., with Dr. HECTOR, and Mr. SULLIVAN.

[Captain Palliser's Paper will be published in the Journal.]

*Dr. Hector to Sir Roderick I. Murchison.*

Fort Vancouver, Dec. 18th, 1859.

DEAR SIR RODERICK,—I arrived too late at Fort Colville for any account of my explorations being communicated in Palliser's

despatches from that place in the end of October. I am sorry to say that I failed in my attempt to find a pass directly from the Saskatchewan Plains to the valley of Thompson River, the route I suggested to you as best in a previous letter. This failure, however, was not owing to any insuperable rocky barriers, but merely to my having encountered a forest growth so dense and so encumbered with fallen timber that I had neither men, time, nor provisions to cope with it. As it was, the escape from this region of the mountains was so tedious that we were nearly caught in the snows of the early mountain-winter; and at one time I thought I should have to abandon most, if not all, of our horses. However, I managed to bring them all to Colville, without the loss of an animal, by the end of October. I am, of course, not prepared to state that it is possible to run a road through the mountains in the direction I have indicated, but, from what I have seen of the mountains in the neighbourhood of the 52nd parallel of latitude, I hardly think the difficulties to be encountered would be much greater than those of any route farther south and yet north of the 49th parallel. However, until something is known of the country about the head of Thompson River, no opinion can be formed on this point.

I had to diverge to the south, when I found I could not get through, and striking the Columbia River in lat.  $51^{\circ} 30'$  N., about 60 miles above the boat encampment, followed it up to its source in lat.  $50^{\circ} 7'$  N., where it originates in two lakes. From its source to the boat encampment, the Columbia flows to the north-west, in a valley from 4 to 6 miles in width, the bottom of which is occupied by immense flats, swamps, and lakes, through which the river flows as a great canal, bounded by natural levées. Its current is sluggish as low as the mouth of Blueberry River, where I struck it, and from this point, if it were ever necessary, it could be with ease navigated to its source.

The country to the west of the Rocky Mountains is very much broken, consisting of ancient schist and granite bosses. It is on the western limit of this range of country, where the basalts which mark the region of the Cascade range commence, that the Pandoreille and Chi-milk-i-mean gold-mines are situated: the first on a tributary of the Columbia from the east and about half a mile north of the boundary-line, and the latter from a stream from the Cascade range and somewhere about the 49th parallel. The latter mines are very rich, but of limited extent; the gold is in large flakes, the average size being like herring-scales. I saw one piece worth 25 dollars.

The season was too late to cross the Cascade range from Colville to Fort Langley, so that we were obliged to follow down the Columbia to this place. Our horses gave out on the way, and we had to take to little dug-out canoes, and descend the river for a long way with considerable labour and risk. We have been very much hampered for ways and means, but some of the gentlemen of the Hudson Bay Company have kindly relieved us from this awkward position on their own responsibility.

The country here is in a state of complete collapse: a state of reaction from the undue excitement of the last few years. They say, however, that Victoria is very lively, its vitality arising from the capital held by the settlers there, — an item quite wanting among the immigrants to remote parts of the United States.

We have been received with great kindness by General Harney and the other officers of the American army at the posts we have visited. They are still pretty stiff-necked about the St. Juan affair, but a great deal of the excitement has evaporated. The troops returned here a few days ago, leaving only one company on the disputed island. All impartial persons on either side seem to admit the extreme nicety of the question, and those that have known the country longest, such as the officers of the Hudson Bay Company, seem to be unanimous in hoping that our Government will hold to our interpretation of the treaty, as on the coast it has always been considered as the correct one.

When we took to the canoes, we had to leave our instruments and papers, and I am obliged to wait here till they overtake me. Palliser has gone on to Vancouver Island to raise money to allow Sullivan to go home at once. He will wait for me there, and when I arrive we shall return to England, *viâ* Panama, at once.

I hardly think my report can be forwarded by this mail, as I doubt if it can reach Palliser in time, as he has been ice-bound at Portland.

Notwithstanding my best endeavours, I have a very poor show of fossils from the mountain strata this year. I have a good collection, however, from the coal-bearing strata of the plains. I would like very much to have an opportunity of seeing the coal strata of Vancouver Island, as I expect that they are all of one age, and all older than tertiaries. However, a short conversation with you, when I have the honour of meeting you again in the course of a few months, will, I am sure, throw more light on this and other matters than anything I can write.

I discovered a second glacier at the head of the north branch of

the Saskatchewan and issuing from Mount Murchison, which much exceeds in size the one I described last year, and which I took the liberty of naming after you along with its parent.

Hoping to have soon the pleasure of seeing you again,

I remain ever your most obedient servant,

JAMES HECTOR.

P.S. I enclose a map of this territory, which I received from General Harney.

The CHAIRMAN said they could not have heard the statement of Captain Palliser without being aware that he was exactly the sort of man to lead a party through such a difficult region. The Duke of Wellington had left it upon record as a first principle, that in order to advance through a country with troops you must supply them well with food; and they had only to hear with what animation Captain Palliser spoke of the destruction he made among the buffalo herds to feel satisfied that he had given every care to the Commissariat department. He was accompanied by men of science, upon whom devolved the duty of making those detailed astronomical and geographical observations which were the great object of the expedition. When all the materials were laid before the public, they would be found replete with the most valuable results. The astronomical positions were fixed by Mr. Sullivan; the magnetic observations by Lieut. Blakiston, and Dr. Hector acted as the naturalist and geologist to the expedition. Dr. Hector ascended some of the highest mountains, and as he was present he had to ask him two or three questions. First—What was the extent of land in the great region of the Saskatchewan, lying to the east of the Rocky Mountains, which was capable of being colonised? Secondly—The means of access into this region? and, Thirdly—What were the probabilities of rendering intercourse at some future time easy and practicable between British Columbia and this great region?

Dr. HECTOR, in answer to the first question, said the whole amount of country drained by the Saskatchewan and the Red River was about 155,000 square miles. Of this, about 80,000 square miles might be accounted of no value at all, except that it might perhaps be used for the purposes of grazing, if the remainder of the district were well settled up to it. This unfertile country embraced the elbow of the Saskatchewan, the Q'Appelle River, down to the boundary. Then there was a strip about forty miles in width at the base of the Rocky Mountains, which again became fertile. The remaining 65,000 square miles was a portion of country lying along the north branch of the Saskatchewan. It commenced at Carlton, and, stretching towards the mountains, extended to about 52° N. The line of it was not very regular, and probably it was an isothermal line. The belt of country lying south of the north branch of the Saskatchewan, and north of the 52nd parallel, swept to the south-east, and was of exactly the same character, as regarded vegetation, as was found in the Red River Settlement. Of these 65,000 square miles, there was not above one-third which was suitable for the immediate purposes of agriculture, and the cultivation of that one-third could be entered upon at once with success, as it would not require the clearing necessary in Canada and elsewhere. The distribution of good and bad country through the Saskatchewan district was, in a great measure, determined by the geological features of the country. There was a great ridge apparently to the east of the district, which travelled in a more or less connected manner, passing to the West of Carlton, crossing the Saskatchewan at the Eagle Hills, and extending a little above the elbow of the south branch, giving rise to the idea of two

isolated hills. That ridge extended to the south of Côte de Prairie, and its southern side formed the well-known Council Bluffs at Mandau Fort. It was really not a ridge, but the edge of an immense plateau of high country which stretched to the west, and formed the watershed between the rivers that flowed into the Gulf of Mexico and those that flowed into the Arctic Ocean by Lake Winnipeg; so that this transverse watershed of the continent was hardly anything more than a group of soft, hardly consolidated strata, which had been left uneroded during the time the immense valleys north and south of it had been scooped out. The whole of the country composing this high plateau was, from the nature of the strata, unfertile. The soil arising from the decomposition of this was highly charged with sulphate of lime and sulphate of soda, and most of the lakes were salt from the amount of saline matter with which the soil was impregnated.

With regard to the means of access, at present the Hudson Bay Company, who were in possession, brought their heavy goods into the country by way of Hudson Bay. It was a very difficult route, and he believed the Company were thinking of giving it up, and instead bringing their goods overland through the United States by way of Red River. This was a very practical method of entering the country. With respect to another means of access, or that by which the exploring party was sent, very little could be said in favour of it at present. It was a curious belt of country, and, geologically considered, was all mountain range, very much interrupted by watercourses. It had been carefully examined by the Canadian Survey, and the result was found to involve six changes in the mode of transit between Lake Superior and Red River. If thought necessary, it would be possible to enter the country by that means, and even to lay a railroad down, but the outlay would be enormous.

The journey he made, to which Captain Palliser had referred, was a trip he took in 1857, when he went almost up to the mountains with dogs. He started from Edmonton House, struck the head-waters of the Mackenzie River, and followed it up to Jasper House. His provisions ran out, and he was obliged to send his dogs back. He went on into the mountains, and got to within thirty or forty miles of his track of the preceding summer in the neighbourhood of Mount Murchison. He then returned through the woods by Lake St. Ann to Edmonton. The first trip he made into the mountains he left Captain Palliser at Slaughter Camp, and made his way up Bow River to Vermilion Pass. There were several passes reported, and he chose Vermilion Pass because it looked the best. It should be remarked that all these passes—the Vermilion Pass, the Kananaski Pass, and the Kutanie Pass—only carried you through the Rocky Mountains. The Rocky Mountains Proper, the great watershed of the continent, was really the eastern flank of an immense tract of mountainous country. They were of no great altitude until you reached the Cascade Range, which ran like a wall along the coast, broken by a few nicks—the Fraser River nick and the Columbia River nick. Between the Cascade Range and the Rocky Mountains, there was a mass of country still to be examined, and when it was examined he believed the passes would be found to continue on. The question had still to be determined whether there was a horse-track. As far as had been ascertained at present, there was no horse-track, owing to the quantity of snow which accumulated in the passes.

DR. JOHN RAE, M.D., F.R.G.S., was delighted to hear that Captain Palliser and his associates had carried out their surveys with such success, and with so little loss in a difficult country. He was glad on another account, because he found, by reference to old charts of the passes used by the Hudson Bay Company for a great many years past, and of which he knew there were charts put into the hands of people some twenty-five or thirty years before, that the observations made by the Company's agents were nearly correct. He believed most of the passes had been traversed previously by Hudson Bay people, but

this did not at all detract from the high credit due to these gentlemen, who had confirmed the correctness of previous observations, and had added the very valuable observations they had themselves made. At the time these passes were first used by the Hudson Bay Company and the North-West Company, there was not that interest in them that there is now, and there was no object in view further than to carry the Company's goods from one part of the country to another. But the Company had never withheld their observations from any person who came with authority to ask for them.

There was one point in which Captain Palliser had made a slight mistake. He said he saved eight days by going by a steamer through Lake Superior. Now, the usual time occupied by canoes going from Fort William along the coast was five days. Sir George Simpson went in four or five days.

The stoppage of supplies at Fort Colville did not arise from the Company. He was at Red River at the time, and much regret was expressed that they were stopped. The order did not come from the Company, but from a higher authority. The pass in our own territory was practicable, but it was rough and not advisable, if a more favourable one could be had, which does exist in American territory. He hoped the passes would not be opened out, as it would only lead to a great waste of capital. There was no difficulty in colonising the country; but where was the market for the produce? The cost of transport was so heavy that the grain could never be carried into the States to compete with American produce. The only thing that could support the country was the trade of the Hudson Bay Company, and when that was gone, the Red River Settlement must go too, or the country must be gradually settled up from the States.

MR. JOHN BALL, F.R.G.S., observed that, as he had taken some share in the arrangements for the expedition when at the Colonial Office, he felt the greatest gratification at the general success which had attended the efforts of Captain Palliser and his companions. Not that all the expectations originally entertained had been fulfilled, because the case was otherwise; but that the public mind had been disabused of some errors, particularly the notion of the colonisation of the southern valley of the Saskatchewan. Much future exertion and waste of capital would be saved, and it would be due to this expedition. One statement made by Dr. Rae he had heard with great surprise, viz., that the Hudson Bay Company—considering the position they occupied with reference to the Government, the Legislature, and the Public, as trustees for the British nation in that great continent—should not have communicated the information they possessed respecting these passes. It was an act of simple justice on their part to give freely any information they possessed, so that the lives and labours of Britons might be saved, and not thrown away on useless efforts. The conclusion to which his mind tended at present was that neither England nor America would be able to claim exclusive right over the route which would ultimately be the high road from England to China. He believed the route would lie alternately north and south of the boundary line; that at the eastern end, from Lake Superior to Red River, the route would lie north of the forty-ninth parallel and along the northern branch of the Saskatchewan; that it would then go southward into American territory, and continue on American territory until, somewhere in the direction of Fort Shepherd, the route again entered British territory.

MR. COLVILLE, a Director of the Hudson Bay Company, said he was not aware that the Company had ever withheld any geographical information from anybody who applied for it. He believed the whole of the information they possessed had been from time to time given to Mr. Arrowsmith, and that were it not for the maps and plans prepared by that gentleman, Captain Palliser would have had great difficulty in getting through the country. Indeed, he thought they had heard sufficient from Captain Palliser to satisfy them that the Hudson Bay Company had no wish to withhold either aid or information.

Both were most willingly given, in accordance with instructions sent by the Company by circular letter to the officers in charge of every station in the country. They had no plans and charts which they were not willing to publish, and which he believed were not already published. He might state that there was one pass which Captain Palliser and his party had not noticed. He had himself gone twice over the Rocky Mountains: the first time by a pass along the Peace River down to the head-waters of the Red River; and when he came back from Fort Vancouver he ascended Columbia River and crossed by the Athabasca portage. He slept on the top of fourteen feet of snow in the month of April.

The CHAIRMAN, in closing the discussion, said they had certainly always heard that the Company had more or less kept their maps to themselves.

MR. ARROWSMITH.—Not at all.

The CHAIRMAN.—Mr. Arrowsmith says “No,” and he was sure, if all the knowledge they possessed of the geographical features of the country had been communicated to Mr. Arrowsmith, that that gentleman would have placed it before the world. There was a Dr. Thomson who had executed some remarkable maps of the country; and Mr. Ellice, a leading member of the Hudson Bay Company, had promised, if it were possible, that those maps should be brought to this country. He understood they were not attainable at once; but if they were, and the names applied by Dr. Thomson were to be realised, he had to announce that the mountain which had been named by Dr. Hector—“Mount Murchison”—would be converted into the “Devil Peak,” *etc.* This came from geographical discoveries not being made public more rapidly.

## ADDITIONAL NOTICES.

### 1. *On a Possible Passage to the North Pole.* By THOMAS HOPKINS, M.B.M.S.

AMONG the various attempts that have been made to approach the North Pole, that of Captain Parry may be considered as the most successful. It appears that he arrived at the latitude of  $82^{\circ} 43' 32''$ , the point nearest to the Pole that has been visited by man, of which we have any knowledge. And it seems to be considered that there is but little probability of a more northern part being reached by the employment of any means at present known.

The difficulties encountered by Parry were certainly formidable, and there is not much likelihood of greater spirit or perseverance being displayed by future explorers than was exhibited by him and his companions. Yet it may be desirable that the nature of the impediments that were met with should be examined, in order to form an opinion respecting the possibility of future navigators being more successful than their predecessors. The climatic features of that part of the world in which the effort was made are so extraordinary as to leave room to doubt whether past experience in other parts, in high northern latitudes, presents the means of forming decided opinions respecting what kind of weather may be found adjacent to the longitudes visited by Parry. The facts which he furnishes deserve close examination and careful analysis, in order to ascertain whether they present to view obstacles that must be deemed insurmountable, and, if not, what are the best means to be used in making a new attempt to overcome them?

A general view of the temperature of the atmosphere in this part may be